Herdman and himself as to the bacteriology of the oyster. The research dealt with the following points :—

(1) The identification and differentiation of *Bacillus typhosus* and *B. coli communis*. This was determined by the difference (*a*) in fermentation ; (*b*) indol production ; (*c*) milk changes ; (*d*) character of growth in potassic iodide potato gelatine ; (*e*) behaviour in gelatine ; (*f*) motility.

(2) The action of sea-water upon the growth of *B. typhosus*. There is no evidence of their multiplication, but the microbe can be detected under laboratory conditions for fourteen days after infection of the water.

(3) The bacteria present in the alimentary canal of the oyster. In cultures kept at 37° C. the microbes were almost entirely *B. coli*, and varieties of Proteus ; but the deduction that the presence of these indicates sewage contamination could not, in the opinion of the authors, be made without special further research. The fresh oyster contains comparatively few bacteria and a small percentage of *B. coli*.

(4) The infection of the oyster with *Bacillus typhosus*. The research showed that this organism did not multiply in the oyster tissues even when these were thus infected ; it further showed that on subjecting such infected oysters to a running stream of pure, clean sea-water, there was a complete disappearance of *B. typhosus* in from one to seven days.

Dr. Kohn added a chemical report upon the presence of iron and copper in the white and green varieties of oyster. It has been stated that the green colour of the gills of Marennes oysters is associated with an excess of iron in these. The author used an electrolytic method of analysis which, by decomposing the organic material, enables the minute quantities of metal present to be determined with considerable accuracy. The results showed that there was no excess of iron in the gills of green as compared with white oysters. Copper was found to be present in both the green and white varieties, but the slight excess in the gills of the former variety appears to be insufficient to account for their colour ; a conclusion which is confirmed by Prof. Herdman's experiments as to the production of the green colour in oysters grown in very dilute saline solutions of iron salts.

Dr. Abram and Mr. Marsden read a paper on the detection of lead in organic fluids. The method employed consisted in a modification of that of von Jaksch. The fluid is mixed with ammonium oxalate in the proportion of 1 grm. to 150 cc. of fluid, and a strip of magnesium free from lead is immersed for twenty-four hours. The magnesium strip is discoloured if lead is present, and the following confirmatory tests may be applied : (*a*) warm strip with crystal of I, forming iodide of lead ; (*b*) dissolve with HCl, and treat solution with sulphuretted hydrogen. The method is at bottom an electrolytic one, and gives results when lead is present in either water or urine in the proportion of 1 in 50,000. It is simple, and is applicable to all forms of organic fluid in which lead is suspected to exist.

CONFERENCE OF DELEGATES OF THE CORRESPONDING SOCIETIES.

THE first meeting of the Conference took place on September 17 ; Dr. Garson was in the chair.

The proceedings began with the reading of a short paper by Mr. George Abbott, general secretary of the South-Eastern Union of Scientific Societies. In this paper Mr. Abbott remarked that while local Natural History Societies had done much good work, yet that in many cases their efforts had been weak, irregular and desultory, the chief cause of failure having been, in his opinion, want of organisation. He thought that a step in the right direction had been taken by the Unions of Scientific Societies already existing, such as those of Yorkshire and the East of Scotland, but considered that the British Association did not sufficiently foster such unions, and that some plan was necessary to organise the local societies under the guidance of the Association, which should, through an organising secretary, help to bring these unions into being. He submitted the following plan for consideration :—

Districts.—The United Kingdom should be divided into fifteen or twenty districts, in each of which all Natural History Societies should be affiliated for mutual aid, counsel, and work. Existing unions should perhaps be imitated, at any rate not disturbed. Geographical lines should decide their size, which might vary in extent and be dependent, in some measure, on railway facilities. From time to time these areas might be subject to review, and necessary changes made.

Congress.—Each of such unions would have its annual congress attended by delegates and members from its affiliated societies. This would be held in a fresh town every year, with a new president, somewhat after the manner of the British Association itself. The congresses would probably take place in spring, but two should never be held on the same day.

These unions would render important help to local societies, would bring isolated workers together, assist schools, colleges, and technical institutes and museums, start new societies, and revive waning ones. Through these annual meetings local and petty jealousies would lessen or turn to friendly rivalries—each society trying to excel in real work, activity, and good science teaching.

Further, economy of labour would be accomplished by a precise demarcation of area for each local society. This would be understood as its sphere of work and influence ; in this portion of country it would have a certain amount of responsibility in such matters as observation, research, and vigilance against encroachments on footpaths, commons, and wayside wastes.

These unions might also, through their Central Committees, bring about desirable improvements in publication, but it would perhaps not be desirable, in all cases, to go in for joint publication. In this, as in other matters connected with the unions, *co-operation and not uniformity* must be our aim.

Union Committees.—Each union would need a general secretary and a committee, all of whom should be intimately acquainted with methods of work and the best ambitions of local societies,

Corresponding Members.—This is another necessary development. Each local society should appoint in every village in its district a corresponding member with some distinctive title, and certain privileges and advantages.

The work asked of him would be to :

(1) Forward surplus natural history specimens to their Society's museum.

(2) Supply prompt information on the following subjects :—
  (*a*) New geological sections.
  (*b*) Details of wells, borings, springs, &c.
  (*c*) Finds of geological and antiquarian interest.

(3) Answer such questions as the British Association or the local society may require.

(4) Keep an eye on historic buildings.

(5) Assist the Selborne Society in carrying out its objects.

In return he should be offered

(1) Assistance in naming specimens, and with the formation of school museums.

(2) Free admission to lectures and excursions.

(3) Copies of Transactions.

(4) Free use of the Society's library.

Mr. Abbott concluded with some remarks on the cost of these Unions. They would be maintained by means of small contributions from the affiliated societies. He did not attempt to estimate the expense of an organising secretary, but thought that, whatever it might be, the British Association would soon find itself amply repaid in the greatly increased efficiency of the local societies.

The Chairman (Dr. Garson) having invited discussion—

The Rev. E. P. Knubley gave the results of his experience of the Yorkshire Naturalists Union during the twenty years of its existence. It was, he believed, the largest in the country, having 500 members and 2500 associates. It had thirty-six affiliated associations. Their work came under five sections, those of geology, botany, zoology, conchology and entomology. In addition they had research committees ; such as a Boulder Committee, a Sea Coast Erosion Committee, and others. An annual meeting was held in one of the Yorkshire towns. Every effort was made to get each member to do some special work.

Mr. M. H. Mills then gave some account of the Federated Institution of Mining Engineers. Each of the societies composing it did its work independently, as before the existence of the Federation. The one difference was that there was now a single publication instead of many.

Mr. Montagu Browne described the constitution of the Leicester Literary and Philosophical Society. As to payments for printing, each section was usually self-supporting ; but in the case of unusually expensive papers, the parent society made a special grant, if necessary.

Mr. De Rance approved of Mr. Abbott's plan, and felt that without an organising secretary nothing in the way of federation would ever be accomplished.

Mr. W. T. Hindmarsh said, that while the Berwickshire Naturalists' Club had a large field of work, there was no other naturalists' club in it with which they could unite, though their boundaries included not only Berwickshire, but Northumberland outside Newcastle.

Prof. Merivale thought that it would be an excellent thing if the Naturalists' Societies could unite as the societies composing the Federated Institution of Mining Engineers had done.

Prof. Johnson said that they had a good example of a Union in Ireland. It comprised four clubs, one in Dublin, another in Belfast, a third in Cork, and a fourth in Limerick. These had one publication, which was common property, *The Irish Naturalist*.

Mr. Eli Sowerbutts felt that, while federation must generally commend itself to all, there were many delicate questions involved in it which made it difficult to come to a decision at that meeting.

After some discussion, it was decided that Mr. Montagu Browne, Prof. Johnson, the Rev. E. P. Knubley, Mr. Hindmarsh, Mr. W. W. Watts, Mr. O. W. Jeffs, the Rev. T. R. R. Stebbing, and Mr. G. Abbott should form a sub-committee to consider Mr. Abbott's propositions, and report to the Corresponding Societies Committee.

MEETING OF THE SUB-COMMITTEE.

A meeting of the Sub-committee was held on Monday, September 21; the Rev. T. R. R. Stebbing in the chair. The following resolutions were agreed to:—

(1) That Mr. G. Abbott's paper on District Unions of Natural History Societies be distributed by the Committee of Delegates of the Corresponding Societies amongst *all* the Natural History Societies in the United Kingdom, with the request that their opinion on the feasibility of the plan advocated in the paper be communicated as early as possible to the Corresponding Societies Committee for its report to the next conference of delegates.

(2) That the formation of District Unions of Natural History Societies is highly desirable, and would be of general advantage.

(3) That the Committee of Delegates of Corresponding Societies be requested to take steps to encourage the formation of District Unions of Natural History Societies.

(4) That it should be distinctly understood that the formation of Unions would not in any way prevent the affiliation of individual Societies of such Unions to the British Association as at present.

The second Conference took place on September 22; Dr. Garson in the chair.

After some discussion, the report of the Sub-committee for the further consideration of Mr. Abbott's paper was received and adopted.[1]

The Chairman then called upon Prof. Flinders Petrie to read a short paper "On a Federal Staff for Local Museums."

The suggestions only affect a distribution of labour, and will rather economise than require extra expenditure.

In all local museums the main difficulty of the management is that there is neither money nor work enough for a highly trained and competent man. It is in any case impossible to get a universal genius who can deal with every class of object equally well, and hardly any local museum can afford to pay for a first-class curator on any one subject. These difficulties are entirely the result of a want of co-operation.

According to the report of the Committee in 1887, there are fifty-six first class, fifty-five second class, sixty-three third class, and thirty fourth class museums in the kingdom. Setting aside the last two classes as mostly too poor to pay except for mere caretaking, there are 111 in the other classes; and deducting a few of the first class museums as being fully provided, there are 100 museums, all of which endeavour to keep up to the mark by spending, perhaps, 30*l.* to 200*l.* a year on a curator.

The practical course would seem to be their union, in providing a federal staff, to circulate for all purposes requiring skilled knowledge; leaving the permanent attention to each place to devolve on a mere caretaker. If half of these first and second class museums combined in paying 30*l.* a year each, there would be enough to pay three first-rate men 500*l.* a year apiece, and each museum would have a week of attention in the year from a geologist, and the same from a zoologist and an archæologist.

The duties of such a staff would be to arrange and label the new specimens acquired in the past year, taking sometimes a day, or perhaps a fortnight, at one place; to advise on alterations and improvements; to recommend purchases required to fill up gaps; to note duplicates and promote exchanges between museums; and to deliver a lecture on the principal novelties of their own subject in the past year. Such visitants, if well selected, would probably be welcome guests at the houses of some of those interested in the museum in each place.

The effect at the country museums would be that three times in the year a visitant would arrive for one of the three sections, would work everything up to date, stir the local interests by advice and a lecture, stimulate the caretaker, and arrange routine work that could be carried out before the next year's visit, and yet would not cost more than having down three lecturers for the local institution or society, apart from this work.

To many, perhaps most, museums 30*l.* for skilled work, and 30*l.* or 40*l.* for a caretaker, would be an economy on their present expenditure, while they would get far better attention. Such a system could not be suddenly started; but if there were an official base for it, curators could interchange work according to their specialities, and as each museum post fell vacant it might be placed in commission among the best curators in that district, until by gradual selection the most competent men were attached to forty or fifty museums to be served in rotation. It is not impossible that the highest class of the local museums might be glad to subscribe, so as to get special attention on subjects outside of the studies of the present curators.

The Chairman having thanked Prof. Petrie and invited discussion—

Mr. W. E. Hoyle hoped that no action would be taken in this matter in such a way as to prevent co-operation with the Museums Association. Prof. Petrie's scheme seemed to him a most simple and practical one, and he hoped that those interested would confer with the officials of the Museums Association with regard to it. He thought the chief difficulty in carrying it out was the almost incredible inertia of Museum Committees.

Mr. M. H. Mills testified to the thoroughness with which such questions were discussed at meetings of the Museums Association.

Mr. G. Abbott supported Prof. Petrie's suggestions; and Mr. Richardson approved them, but thought the Committee of the Dorset County Museum was hardly in a position to incur the expense.

Prof. Johnson thought it would be a good thing if the Museums Association could become a Corresponding Society of the British Association, so that one or more of its chief officials could always be present at discussions of this kind. He would protest strongly against the suggestion that the curators of our museums should be converted into mere caretakers, as he thought the tendency should be of an opposite kind. He thought it would be better that our local societies should make a specialist of some kind their curator, and give him a chance of rising above the position he held at first.

Prof. Carr regretted that Prof. Petrie's paper had not been read before the Museums Association. Some time ago a sub-committee had been appointed by that Association to report upon a scheme resembling that of Prof. Petrie, but no definite result had been attained. Possibly if Prof. Petrie were now to bring this paper before the Museums Association, more important effects would be produced.

Prof. Petrie, in reply, said that this was to a great extent a money question. He did not, however, think that his suggestions necessarily involved additional expense. He thought that it was better that the money should be divided between the mere caretakers and the specialists, rather than that an attempt should be made to combine them by employing a man who could not be a specialist on all points. Indeed the curators, who were more than mere caretakers, would, through his plan, receive more than before, as they would be able to render service at a number of places, instead of being confined to one.

A vote of thanks to Prof. Petrie having been passed, the Chairman invited remarks from the representatives of the various Sections.

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[1] In connection with this subject, it may be useful to remind the reader of Prof. Meldola's paper on "The Work of Local Societies" (NATURE, vol. liv. p. 114, June 4, 1896).

Section C.

Mr. W. Watts invited the co-operation of the Corresponding Societies in the work of the Geological Photographs Committee and the Erratic Blocks Committee.

Mr. De Rance remarked that though the labours of the Underground Waters Committee had come to an end, he hoped the local societies would record carefully in their districts everything bearing upon that subject.

Section H.

Mr. Sidney Hartland asked for the co-operation of the Corresponding Societies in the work of the Ethnographical Survey Committee. Considerable progress had been made in the past year. There were no departments in which it was so important to have speedy information as those of dialect and folk-lore, as education, facilities for railway travelling, and industrial migrations were rapidly destroying local customs, dialects and traditions. Still, in some parts there had been little change, and if physical measurements were made and physical characteristics noted, in stationary districts, of persons belonging to the old families of the locality, much light might be thrown on the various races of the British Isles. He would be glad to furnish any delegates interested in the subject with copies of the Ethnographical Committee's schedules, or with any other help in his power.

Mr. John Gray (Buchan Field Club) described the work done in his district in noting the physical characteristics both of adults and of school children.

The Chairman remarked that Mr. Gray's society was doing very good work, and giving an illustration of what was required. As the information asked for by the Ethnographic Committee was of so many different kinds, he thought the local societies would be wise to form sub-committees, one dealing with physical measurements and characteristics, another with folk-lore, and so on. Then photographers were needed to illustrate both people and ancient monuments. Investigations of this kind would at once enrich the *Transactions* of a local society, and help the work of the British Association.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Cambridge.—The Walsingham Gold Medal for an essay or monograph on a botanical, geological, or zoological subject will be awarded next year. Competitors must be under the standing of M.A., and must send their essays to Prof. Newton, F.R.S., not later than October 9, 1897.

The General Board proposes to fix the stipend of the vacant Professorship of Surgery at £300, but hopes that after 1898 the state of the University finances may make it possible to raise this sum to £500 a year, tenable with a fellowship.

About 135 of the freshmen admitted this term propose to study natural science and medicine with a view to the B.A. and M.B. degrees.

Dr. Allbutt, F.R.S., is appointed an Elector to the chair of Pathology, and Dr. Hill to the chair of Anatomy, in the room of the late Sir G. M. Humphry.

The Examiners for the Natural Sciences Tripos 1897 are—W. N. Shaw, F.R.S., R. Meldola, F.R.S., Dr. A. Scott, A. Hutchinson, H. Woods, J. J. H. Teale, F.R.S., Dr. H. M. Ward, F.R.S., H. Wager, S. F. Harmer, F. Jeffrey Bell, F.R.S., A. C. Seward, J. J. Lister, Prof. A. M. Paterson, Dr. A. Hill, Dr. L. E. Shore, and Prof. W. D. Halliburton.

At the celebration of the 150th anniversary of Princeton University, on October 22, the degree of LL.D. was conferred upon Lord Kelvin and Prof. J. J. Thomson.

It is announced in *Science* that a laboratory built for the Massachusetts General Hospital, Boston, at a cost of over £4000, will soon be ready for use. The building includes well-fitted laboratories of chemistry, bacteriology and histology. It is hoped that an additional sum of £20,000 will be collected for an endowment.

Dr. Thos. Ewan, Chief Assistant in the Chemical Department of the Northern Polytechnic Institute, has been appointed Research Chemist to the British Aluminium Company in their works at Oldbury. He is succeeded at the Northern Polytechnic by Mr. H. Charles L. Bloxam, at present Chief Assistant in the Chemical Department of the Goldsmiths' Institute, New Cross.

The following Scholarships have been awarded in connection with the present session (1896-7) of the Central Technical College:—Clothworkers' Scholarship, £60 a year with free education for two years, L. P. Wilson; Mitchell Scholarship, £40 a year with free education for two years, R. S. Potter; Clothworkers' Technical Scholarship, £30 a year with free education for two years, E. W. Cook; David Salomons Scholarship, £50, E. W. Marchant; John Samuel Scholarship, £30, H. W. Hanbury; Institute's Scholarships, free education for three years, F. S. Miller, J. I. Hunter, F. W. Fawdry.

A general meeting of the members of the Convocation of the University of London was held on Tuesday. After a long discussion it was resolved:—"That this House earnestly desires the early establishment, in accordance with the expressed intentions of the founders of this University, of University professorships and lectureships in science and literature, together with such institutions as may tend to the encouragement of original study and research on the part of members of the University." It was further decided, on the motion of Mr. W. T. Lynn—"That it is desirable to make application to the Government for the provision of funds to establish a students' observatory in the neighbourhood of London for the instruction, primarily, of members of the University in practical astronomy, with the ultimate view of taking part in the progress of astronomical investigation."

So much money is being frittered away by Technical Education Committees as grants for instruction in such subjects as basket-making and hedging, that no apology is needed for again calling attention to the courses of science lectures which the Councils of University and King's Colleges, London, have arranged in conjunction with the Technical Education Board, to be held in the evenings and on Saturday mornings. These lectures are of a university type, being of the same standard as those which are given in the day-time. They are intended for those students who, being occupied in the day, are unable to obtain university instruction except in the evening; and they are given at considerably reduced fees. Among these courses may be mentioned: (1) An evening course on Advanced Chemistry, at University College, by Mr. C. F. Cross. The course will consist of fifteen lectures, given on Friday evenings, commencing on Friday, November 6; and the subject of the course is "Cellulose, the chemistry of vegetable fibres, and of their industrial preparations and uses." The fee for the whole course is £1 1*s.*, which, in the case of those who earn weekly wages, may be paid in two instalments. (2) A Saturday morning course for teachers, at University College, by Prof. Karl Pearson, on "Graphic Methods." The course deals mainly with the use of the drawing-board in elementary, geometrical, and mechanical teaching. The admission to this course is free for teachers. The following lectures have also been arranged by the Professors at the two colleges. In the evenings, Prof. Hudson Beare and Prof. Fleming are giving courses at University College on Mechanical Engineering and Electrical Engineering respectively; while at King's College, Prof. Robinson is holding a course on Civil Engineering, Prof. Banister Fletcher on Architecture, Prof. Adamson Experimental and Practical Physics, and Prof. Hudson on Pure Mathematics. The fee for each of these courses is £1 1s. On Saturday mornings Prof. Capper is holding a course, at King's College, on the Strength of Materials, to be followed in January by a course on the Theory of Machines. In January Prof. Fleming will also commence a course, at University College, on Electricity and Magnetism. The Saturday morning courses are free for teachers. We are glad to make these courses known, because we feel that their success would induce provincial Technical Education Committees to pay more attention to the higher branches of scientific instruction than most of them do at present.

SCIENTIFIC SERIALS.

American Journal of Science, October.—On the rate of condensation in the steam-jet, by A. de Forest Palmer. Photographs of a vertical steam-jet were obtained with the aid of sunlight. The invisible portion has the general shape of the inner mantle of a Bunsen flame, and its outline depends upon the pressure of the jet and the velocity with which the condensation travels towards the nozzle. The author finds that the separation surface of the invisible portion is sharply marked, and that it oscillates up and down. The demarcation is